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**REVISED RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION****APR1400 Design Certification****Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD****Docket No. 52-046**

**RAI No.:** 427-8444  
**SRP Section:** 19.05 – Aircraft Impact Assessment  
**Application Section:** 19.5  
**Date of RAI Issue:** 03/01/2016

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**Question No. 19.05-5**

In accordance with 10 CFR 50.150, "Aircraft Impact Assessment," each applicant listed in paragraph (a)(3) shall perform a design-specific assessment of the effects on the facility of the impact of a large, commercial aircraft. Using realistic analyses, the applicant shall identify and incorporate into the design those design features and functional capabilities to show that, with reduced use of operator actions:

- (i) The reactor core remains cooled, or the containment remains intact; and
- (ii) Spent fuel cooling or spent fuel pool integrity is maintained.

To ensure compliance with 10 CFR 50.150, the staff requests that the applicant address the following:

1. In APR1400 Tier 2 DCD Section 19.5.4.3, "Fire Barriers and Fire Protection Features," the section begins by stating that the design and location of 3-hour fire barriers that separate the safety divisions within the Auxiliary Building (AB) are key design features. This statement conflicts with the same paragraph's next sentence which states that "the assessment credited the design location of fire barriers ... as depicted in Figures 9.5A-1 through 9.5A-11". This is an unusual statement since only the first nine of these Figures depict the AB; and the remaining two Figures are related to the Emergency Diesel Generating Build (EDGB). The staff requests that the applicant provide a clarification to DCD 19.5.4.3 by clearly indicating if all fire barriers on the referenced figures or only those that separate safety divisions are the key design features.
2. In APR1400 Tier 2 DCD Section 19.5.4.3, "Fire Barriers and Fire Protection Features," the last sentence states that the fire protection key design features ensure that at least one complete train within the AB and EDGB is available to provide core cooling. However, there are no fire protection features within the EDGB that are credited as key design features under DCD Section 19.5. The staff requests that the applicant provide clarification to DCD

19.5.4.3 by clearly identifying which fire protection features are credited for the EDGB. In addition, the applicant is requested to identify all key design features that support the protection against fire damage from the impact of a large, commercial aircraft.

3. APR1400 Tier 2 DCD Section 19.5.4.3, "Fire Barriers and Fire Protection Features," states that certain fire barriers (including fire doors, fast-acting blast dampers, and penetration seals) are credited for 5 psid and that these barriers are identified on Figures 9.5A-1 through 9.5A-11. However, these figures do not appear to contain any 5 psid barriers. The staff requests that the applicant provide clarification in DCD Figures 9.5A-1 through 9.5A-11 by clearly identifying which barriers are credited as 5psid.

### **Response - (Rev.1)**

1. The fire barriers depicted in the fire area drawings in Section 9.5A are key design features. The paragraph will be rewritten as follows: "The design and location of 3-hour fire barriers, including fire doors, penetration seals and dampers within the AB and EDGB are key design features for the protection of core cooling equipment within these buildings from the impact of a large commercial aircraft. The assessment credited the design and location of fire barriers (including doors) as depicted on Figures 9.5A-1 through 9.5A-11 to limit the effects of internal fires created by the impact of a large commercial aircraft."
2. The EDGB and associated fire barriers are credited design features. The paragraph will be rewritten as follows: "The design and location of 3-hour fire barriers, including fire doors, penetration seals and dampers within the AB and EDGB are key design features for the protection of core cooling equipment within these buildings from the impact of a large commercial aircraft. The EDGB contains key design features and functions for emergency AC power, such as the emergency diesel generators and associated components."
3. The sentence "These 5psid barriers are identified on Figures 9.5A-1through 9.5A-9." will be rewritten as follows: "These 5psid barriers are identified on Figures 19.5-1 through 19.5-10" as attachment. The 5-psid barrier drawings will be added into DCD section 19.5.

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### **Impact on DCD**

The DCD will be revised as indicated on the attachment.

### **Impact on PRA**

There is no impact on the PRA.

### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

### **Impact on Technical/Topical/Environmental Reports**

There is no impact on any Technical, Topical, or Environmental Report.

- a. The location and design of the Auxiliary Building (AB) structure as described in Section 3.8.4 are key design features in protecting the RCB [up to elevation 156 feet] from the impact of a large commercial aircraft. Additionally, portions of the AB provide protection of the RCB on the northeast, northwest and southwest sides [up to elevation 195 feet].
- b. The location and design of the EDGB as described in Section 3.8.4 are key design features in protecting portions of the east wall of the AB [up to elevation 137 feet] from the impact of a large commercial aircraft.
- c. The physical separation of the east and west EDGs, as described in Section 8.3, Figure 1.2-14 and Figure 1.2-21, is a key design feature in limiting the loss of electrical power to key safety systems from the impact of a large commercial aircraft.
- d. Properties of concrete and reinforcement bars, as described in Appendix 3.8A, are key design features in protecting key safety equipment in the AB.
- e. The location of the AAC GTG as shown on Figure 1.2-1 relative to the EDGs is a key design feature in limiting the loss of electrical power to key safety systems from the impact of a large commercial aircraft.

19.5.4.3 Fire Barriers and Fire Protection Features

blast

and EDGB

The design and location of 3-hour fire barriers, including fire doors, penetration seals and dampers ~~that separate the safety divisions~~ within the AB are key design features for the protection of ~~safety-related~~ core cooling equipment within these buildings from the impact of a large commercial aircraft. The assessment credited the design and location of fire barriers (including doors) as depicted on Figures 9.5A-1 through 9.5A-11 to limit the effects of internal fires created by the impact of a large commercial aircraft. In addition, certain fire barriers, including doors, fast-acting blast dampers and penetration seals, are credited for 5 psid. ~~These 5 psid barriers are identified on Figures 9.5A-1 through 9.5A-9.~~ These key design features ensure at least one complete train of secondary heat removal equipment and necessary support systems to include cooling water, electrical power supply and distribution, and instrument and control within the AB and EDGB is available to provide core cooling following the impact of a large commercial aircraft.

The EDGB contains key design features and functions for emergency AC power, such as the emergency diesel generators and associated components.

These 5psid barriers are identified on Figures 19.5-1 through 19.5-10.

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-1 5-psid barrier – AB El. 55'-0"

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-2 5-psid barrier – AB El. 68'-0"

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-3 5-psid barrier – AB El. 78'-0"

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-4 5-psid barrier – AB El. 100'-0"

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-5 5-psid barrier – AB El. 120'-0"

New Added



Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-6 5-psid barrier – AB El. 137'-6"

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-7 5-psid barrier – AB El. 156'-0"

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-8 5-psid barrier – AB El. 174'-0"

New Added

**Security-Related information - Withhold Under 10 CFR 2.390**

**Figure 19.5-9 5-psid barrier – AB El. 195'-0”**

New Added

Security-Related information - Withhold Under 10 CFR 2.390

Figure 19.5-10 5-psid barrier – EDGB El. 100'-0" & 121'-6"

New Added